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Hospital Variation in Postpartum Tubal Sterilization Rates in California and Texas

Joseph E. Potter, PhD, Amanda J. Stevenson, MA, Kari White, PhD, Kristine Hopkins, PhD, and Daniel Grossman, MD

Population Research Center, University of Texas at Austin, Austin, Texas; the Department of Health Care Organization and Policy, School of Public Health, University of Alabama at Birmingham, Birmingham, Alabama; and Ibis Reproductive Health, Oakland, California

Abstract

OBJECTIVE—To estimate variation across hospitals in the rate of postpartum sterilization.

METHODS—All hospitals with deliveries in California and Texas in 2009 were included. Proportion of live singleton deliveries with postpartum sterilization was calculated by hospital, insurance status (Medicaid compared with private insurance), type of delivery, and state.

RESULTS—Within each insurance status in California and Texas, we found wide variations across hospitals in postpartum tubal sterilization rates. This variability was not explained by disparities in hospital cesarean delivery rates. Some, but not all, of this variation was attributable to the absence of sterilizations in Catholic hospitals. Overall, postpartum tubal sterilization rates were higher in Texas than in California (10.2% compared with 6.7%), and this difference was found among both public insurance and private insurance patients. Interval sterilizations were more frequent in California, but the difference was not large enough to offset the difference in postpartum sterilization.

CONCLUSIONS—The variation in postpartum tubal sterilization rates across hospitals is substantial and exists even among hospitals without religious affiliations. Large-scale studies are needed to assess the demand for, and the barriers to, obtaining postpartum sterilization.

Female sterilization is one of the most common contraceptive methods in the United States, and it is used by 38% of women who have children.¹ Nationally, more than half of all sterilizations are postpartum procedures, which number approximately 340,000 per year and occur after 8–9% of all deliveries.^{2,3} Postpartum sterilization is more frequent among women delivering by cesarean delivery than among those delivering vaginally.

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Corresponding author: Joseph E. Potter, PhD, Population Research Center, The University of Texas at Austin, 1 University Station, Mail Stop A1800, Austin, TX 78712; joe@prc.utexas.edu.

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Concern regarding the availability of postpartum sterilization surfaced recently in the controversy regarding the insurance coverage mandate included in the Affordable Care Act, particularly with respect to Catholic hospitals.³ Moreover, information is accumulating from a number of local studies indicating considerable frustrated demand for postpartum tubal sterilization. In these studies, the main reasons for not obtaining a sterilization were bureaucratic and institutional barriers, such as delivering before the 30-day waiting period of the Medicaid consent form had expired, unavailability of physicians or facilities, particularly on weekends, and lack of funding.⁴⁻⁸ Also, a recent survey of a national sample of obstetricians found that doctors often try to dissuade their patients from receiving a sterilization procedure.⁹

Taking advantage of the availability of hospital discharge data at the state level with nearly complete coverage of all deliveries, we report on rates of postpartum tubal sterilization across hospitals in California and Texas. We aim to estimate how much variation in postpartum sterilization exists across hospitals, and whether there are notable differences between California and Texas and between public insurance and private insurance patients.

MATERIALS AND METHODS

We focused on California and Texas because they are central to debates about unintended pregnancy and contraceptive practice. In California, 56% of all pregnancies are unintended, and 53% of all pregnancies in Texas are unintended.¹⁰ Second, California and Texas have the largest number of Medicaid births, which account for approximately half of all births in each state.

Although similar in terms of unintended pregnancy and Medicaid births, California and Texas differ markedly in their approaches to supporting family planning. The programs in California are more generously funded and more inclusive of recent migrants. There are three main sources of public funding for family planning in each state. The first is specific federal funding for clinics. For example, Title X is a federal program that provides comprehensive family planning and related preventive health services to low-income women and men. In 2009, Title X served approximately 5.4% of California women (876,937 clients), far more than in Texas.¹¹ Title X eligibility does not require documentation of immigration status. The second main source of public funding for family planning in California and Texas is Medicaid (referred to as Medi-Cal in California), which requires states to cover early postpartum care, including contraception, in addition to pregnancy-related care for eligible women. In Texas, pregnant women in families with incomes up to 185% of the Federal Poverty Level qualify, whereas in California pregnant women in families with incomes up to 200% of Federal Poverty Level qualify.¹² In addition, the Medicaid program in California covers legally residing immigrant women who have been in the country less than 5 years, whereas the program in Texas does not. Undocumented immigrants are only eligible for emergency Medicaid, which includes coverage for emergency labor and delivery. In California, but not in Texas, emergency Medicaid covers postpartum contraception, including sterilization.

Both Texas and California extend family planning services to low-income people under Medicaid waiver or State Plan Amendment programs. The Texas waiver program, known as the Women's Health Program, covers fertile women aged 18 and older up to 185% of Federal Poverty Level; it was due to expire at the end of April 2012, because of the federal government's objections to recent state legislation excluding from the program any organization affiliated with an abortion provider. At this moment, the program is the subject of litigation in federal courts. In California, a State Plan Amendment, the Family Planning Access, Care, and Treatment program, covers both fertile women and men of any age up to 200% of Federal Poverty Level. Undocumented immigrant women are not eligible for the Texas Women's Health Program, but they are covered by the California Family Planning Access, Care, and Treatment program.

For this analysis, we secured access to the Texas Inpatient Hospital Discharge Data from the Texas Center for Health Statistics and the California Patient Discharge data from the California Office of Statewide Health Planning and Development. Because both states mandate complete reporting from hospital electronic medical records billing systems, these data include virtually all hospital discharges and provide sufficient detail to identify deliveries with and without postpartum sterilizations. We can also identify type of delivery, number of neonates born and their vital status, surgical procedures, and complications. The records also include the patient age, insurance status, and hospital name. However, the reporting on race or ethnicity is incomplete, and parity is not available in these records. Additionally, we secured data on discharges from ambulatory surgery centers for Texas and California from the same state agencies. In California, ambulatory surgery discharge data covered all of 2009. In Texas, ambulatory data were only available for the first quarter of 2010. Together, these four data sources provide a registry of virtually all deliveries and sterilizations in the two states. The exceptions include a relatively small number of home births or births taking place in very small hospitals or birthing clinics, as well as some sterilizations performed at interval by hysteroscopy.

The 2009 discharge data include 376,607 deliveries in 225 hospitals in Texas and 511,177 deliveries in 274 hospitals in California. Applying Physicians' Current Procedural Terminology Coding System and International Classification of Diseases, 9th Revision, Clinical Modification codes for vaginal or cesarean deliveries of singleton live births allowed us to identify deliveries by type; codes for bilateral occlusion or destruction of the fallopian tubes identify the provision of postpartum sterilization. To identify interval sterilizations, we applied the same Physicians' Current Procedural Terminology Coding System and International Classification of Diseases, 9th Revision, Clinical Modification sterilization codes to the ambulatory data.

We further distinguish between deliveries paid for by private insurance (including military insurance) and deliveries paid for by Medicaid. Deliveries paid for by other sources (including county funds, indigent care, self, and unknown) are omitted from our analysis. The proportion of deliveries not identifiably paid for by Medicaid or private insurance was 9.9% in Texas and 3.6% in California. The proportion is higher in Texas because Texas has more births in small hospitals with low birth volume, leading to the redaction of identifying

information, including Medicaid eligibility status. The proportion of Medicaid births was 53% in Texas and 48% in California.

We first calculated the proportion of births followed by a postpartum tubal ligation at the state level (henceforth referred to as the postpartum tubal ligation rate), distinguishing between deliveries covered by Medicaid and private insurance. At the state level, we also distinguish between vaginal and cesarean deliveries, and calculate the postpartum tubal ligation rate for each. The last state-level postpartum tubal ligation calculation is according to the age of the mother, distinguishing between women who delivered at age younger than 30 and those who delivered at age 30 or older. We chose this age cut-off because it previously had been identified as a predictor of regret.¹³ To estimate the relative importance of interval and postpartum sterilizations in each state by insurance status, we looked at the percent distribution of the total number of sterilizations in 2009 according to whether they were postpartum after a cesarean delivery, postpartum after a vaginal delivery, or interval procedures. Because the earliest discharge data for ambulatory surgical centers in Texas were for the first quarter of 2010, we estimated the number of interval sterilizations in 2009 as four times the number reported for this quarter.

To calculate postpartum tubal ligation rates for individual hospitals, we aggregated the individual records by hospital and insurance type. Because rates of sterilization vary by insurance status within the same hospital, we calculated the postpartum tubal ligation rate separately for deliveries paid for by Medicaid and those paid for by private insurance, thus calculating two rates for each hospital. For each insurance status, we only display results if that hospital had at least 50 births. We also calculated cesarean delivery rates for each hospital, again distinguishing between Medicaid and private insurance deliveries to be able to assess the association across hospitals between postpartum tubal ligation rate and the cesarean delivery rate. We used scatter diagrams to provide an approximate indication of how the two rates are associated. We then looked at the distribution of women according to the postpartum tubal ligation rate of the hospital in which they delivered. For each state and insurance status, we used histograms to present the resulting distribution of births, classifying the sterilization rates of the hospitals into seven categories, and show the total number of deliveries taking place in the hospitals in the respective categories. Because we used the universe of deliveries in 2009, statistical significance for comparisons between Texas and California in 2009 is not an issue. However, to facilitate inference beyond these states and this year, we also tested all comparisons described in this article using logistic regression. All tests for differences were significant at the $P < .001$ level. This study was determined to be exempt from approval by the Institutional Review Board of the University of Texas at Austin.

RESULTS

Table 1 shows that the overall postpartum tubal ligation rate is lower in California than in Texas, and that this difference is maintained among women whose delivery was covered by public insurance as well as those covered by private insurance. Whereas the cesarean delivery rate is somewhat higher in Texas than in California (36.6% compared with 33.0%), substantial differences between the two states may be seen in the postpartum tubal ligation

rates for each type of delivery among Medicaid and private insurance patients. The same is true when deliveries are classified according to the age of the mother. The lower 2009 postpartum tubal ligation rates among private insurance patients in both states are compensated for by a higher ratio of interval procedures to postpartum procedures in that sector (Fig. 1). However, accounting for the interval sterilizations does little to diminish the overall difference between the two states. Aggregating across insurance statuses, the ratio of total number of 2009 sterilizations (postpartum and interval procedures) to 2009 deliveries is greater in Texas compared with that in California (0.131 compared with 0.104).

Figure 2 shows the plots of the individual hospitals in California and Texas according to the postpartum tubal ligation rate of the hospital (the horizontal axis) and the cesarean delivery rate of the hospital (vertical axis) for deliveries paid for with the specified type of insurance. The size of the circles reflects the number of deliveries of the specific insurance type in each hospital. Catholic hospitals with no sterilizations are located on the far left side of each diagram. There is little slope apparent in the cloud of points in each diagram, indicating a lack of correlation between the respective rates in each state and insurance status. Across both delivery payment types in each state, there is substantial variation in the postpartum tubal ligation rate across hospitals. In California, this spread exists even among hospitals with large numbers of publicly funded deliveries, which have postpartum tubal ligation rates ranging from 0% to 15%. The two scatter plots for Texas show an even wider range of postpartum tubal ligation rates. Moreover, Texas has fewer Catholic institutions with very low or zero postpartum tubal ligation rates among both delivery payment types, as well as more hospitals with high postpartum tubal ligation rates, especially among larger hospitals, where the highest rate is 30%.

Another perspective on the dispersion in postpartum tubal ligation rate is shown in Figure 3, which shows the distribution of births according to the postpartum tubal ligation rate of the hospital where the delivery took place. Among both public and private insurance deliveries, a larger fraction of women deliver in hospitals with low postpartum tubal ligation rates in California as compared with Texas. Almost one-quarter (24.1%) of California Medicaid births took place in hospitals with a postpartum tubal ligation rate less than 6%, whereas in Texas this proportion was less than half that size (11.9%). The contrast is even more extreme for births covered by private insurance: 50.6% of births took place in hospitals with low (less than 6%) postpartum tubal ligation rates in California as compared with 13.7% in Texas. Equally striking differences may be observed in the proportion of births taking place in hospitals with postpartum tubal ligation rates of 12% or more. In California, among Medicaid births the proportion is 16.5% as compared with 34.3% of Medicaid births in Texas, whereas the respective proportions are 3.7% and 19.5% among deliveries covered by private insurance.

DISCUSSION

The first conclusion to be drawn from this analysis is that there is great variation across hospitals in the frequency of postpartum tubal ligation. Figure 1 indicates that the variation in postpartum sterilization is greater among Medicaid-eligible women than it is among women whose deliveries are covered by private insurance. There is not a strong relationship

between the cesarean delivery rate and the postpartum tubal ligation rate, for either public insurance or private insurance patients, in either state. The main question is whether patient choice or obstacles to obtaining the procedure drive the observed variation in sterilization.

Irrespective of the underlying cause of the variation across hospitals, it is clear that a dichotomy between hospitals where no postpartum sterilizations are performed because of a religious prohibition and hospitals where at least some postpartum procedures are performed misses a large part of the variation across institutions in postpartum tubal ligation rates. Also, to the extent that this variation is not driven by demand, its magnitude indicates that there are substantial differences in the barriers patients face across hospitals. One such difference might be in the extent to which physicians and staff help patients meet the requirements for informed consent and, in the case of Medicaid patients, complete the “Consent to Sterilization” section of the Medicaid Title XIX form at least 30 days and not more than 180 days before undergoing the sterilization procedure. Another likely factor is community-level or hospital-level variation in physician counseling regarding sterilization.⁹ A third factor might be the staff and operating rooms that a hospital has available, as well as the priority it gives to committing scarce resources for this purpose. Given the minimal requirements for doing a postpartum sterilization in conjunction with a cesarean delivery, it seems likely that medical norms and institutional procedures for securing informed consent are the main drivers in the variation across hospitals in the postpartum tubal ligation rates for cesarean delivery births. Conversely, hospital resources and priorities regarding sterilization may be the key determinant of the variation in postpartum tubal ligation rates after vaginal births. Of course, postpartum sterilization is not the only “discretionary” surgical procedure for which there is wide variation across hospitals and geographic areas.^{14–16}

Another intriguing question is, what accounts for the differences in postpartum tubal ligation rates we have observed between California and Texas? For both Medicaid and private insurance patients, some of the difference derives from the greater proportion of births taking place in Catholic hospitals with very low postpartum tubal ligation rates in California as compared with Texas. But it is also the case that hospitals with high postpartum tubal ligation rates account for a much larger share of all deliveries in Texas than in California, especially with regard to Medicaid patients. Possible explanations of the differences in rates between California and Texas are state family planning policies and differences in medical norms. In particular, because of the coverage of the Family Planning Access, Care, and Treatment program in California, public insurance patients there may have greater access to long-acting reversible methods that may constitute an alternative to sterilization, even if not all Family Planning Access, Care, and Treatment program providers offer intrauterine contraception.¹⁷ An ancillary influence working against sterilization in both states is that women lose eligibility for the preventive services available through the Medicaid waiver program when undergoing sterilization.

This study has a number of limitations. The discharge data do not include parity, which could potentially have explained some of the variation in postpartum tubal ligation rates across hospitals, state, and insurance status. Most importantly, we have no independent means for assessing patient demand, or for assessing what prevented desired postpartum procedures from taking place except in the minority of hospitals where hospital policy is

based on religious doctrine. We also do not have information about physician knowledge, attitudes, or practices with regard to sterilization. Nevertheless, we believe these initial findings have some clear implications.

Given the importance of postpartum sterilization in the United States and the sizeable variation in postpartum tubal ligation rates found across hospitals in these two states, there is a need to interview representative samples of women during pregnancy or soon after delivery to ascertain their contraceptive preferences, as well as any impediments that may have kept them from undergoing sterilization. Such questions would be a valuable addition to the standard Pregnancy Risk and Monitoring System surveys implemented in many states. Another approach is to follow hospital records to determine the proportion of public insurance patients who signed consent forms for sterilization and who actually received postpartum sterilization.¹⁸ A subsequent task will be to estimate the number of unwanted pregnancies and births, and the resulting costs that could be saved by providing economical and reliable access to the full range of contraceptive options in the postpartum period, including sterilization. Although undoubtedly there are challenges to providing postpartum tubal ligations in busy hospitals that serve a large Medicaid population, meeting this demand should be one component of a multipronged strategy to reduce the high unintended pregnancy rate in this nation.

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Fig. 1.
Percent distribution of sterilizations by timing and type of delivery for Medicaid and private insurance patients in California and Texas in 2009.

Fig. 2.
Hospital postpartum tubal ligation rate and cesarean rate by insurance status in California and Texas in 2009.

Fig. 3. Frequency of deliveries by hospital postpartum tubal ligation rate by insurance status in California and Texas in 2009.

Table 1
California and Texas Birth and Postpartum Tubal Sterilization Frequencies in 2009 by Insurance Status, Type of Delivery, and Age

	California			Texas		
	Medicaid	Private	Total	Medicaid	Private	Total
All births						
Births	247,831	244,709	492,540	193,617	143,050	336,667
With postpartum tubal ligation	19,377	13,683	33,060	21,733	12,688	34,421
Postpartum tubal ligation rate	7.8	5.6	6.7	11.2	8.9	10.2
Cesarean delivery						
Births	79,647	82,879	162,526	66,501	56,843	123,344
With postpartum tubal ligation	12,971	10,907	23,878	14,003	10,056	24,059
Postpartum tubal ligation rate	16.3	13.2	14.7	21.1	17.7	19.5
Vaginal delivery						
Births	168,184	161,830	330,014	127,116	86,207	213,323
With postpartum tubal ligation	6,406	2,776	9,182	7,730	2,632	10,362
Postpartum tubal ligation rate	3.8	1.7	2.8	6.1	3.1	4.9
Age younger than 30 y *						
Births	166,655	91,823	258,478	152,048	76,008	228,056
With postpartum tubal ligation	6,548	2,304	8,852	11,494	3,725	15,219
Postpartum tubal ligation rate	3.9	2.5	3.4	7.6	4.9	6.7
Age 30 y or older *						
Births	64,430	130,842	195,272	39,431	66,646	106,077
With postpartum tubal ligation	11,820	10,451	22,271	9,939	8,922	18,861
Postpartum tubal ligation rate	18.3	8.0	11.4	25.2	13.4	17.8
Group characteristics						
Cesarean delivery rate	32.1	33.9	33.0	34.3	39.7	36.6
Proportion 30 y or older	27.9	58.8	43.0	20.6	46.7	31.7

Data are n or %.

* Because of redaction, age of women is missing for 7.8% of California deliveries and less than 1% of Texas deliveries.